

My Earth science educator story – Sandra Villacorta What I did, why I did it and what happened



Teaching in a developing country

My father taught me to read at age 5 and since that time I have been encouraged by my teachers at school to read and research. My mother travelled a lot during my childhood and brought me different coloured boulders from each trip, which I collected. I liked reading encyclopaedias especially those of natural sciences and history. At 8 years old, my mother asked me to choose a Christmas gift and I chose a chemistry set. My sibling didn't understand why I had fun doing experiments and learning the names of chemical elements.

My father encouraged me and my brother to become engineers. So I enrolled at the National Engineering University (UNI), an institution listed in Peru as "only for men". I started my bachelor degree in the school of Geological Engineering with a group of four girls and 25 boys. The course that changed my life was 'Geology Applied to Construction' because in one of the first classes Professor Carlos Vallejo emphasized that applied geology helps to save lives. I immediately knew this was the speciality I wanted to develop in my professional career.

When I achieved the title of Geologist Engineer in 2003, I embarked on an exciting job as a junior geologist in the Environmental Geology and Geological Risks Department of the Geological Mining and Metallurgical Institute of Peru - INGEMMET. Working as a geologist in the geologically dynamic Western Andes Range has been an incredible experience to me. I focused on learning new tools and methodologies for the evaluation of geological risks to mitigate their impacts in Peru. I was involved in dissemination of geoscience as part of my duties in INGEMMET. I led training and mentoring programmes for geologist trainees in my department, while also involved in organizing and leading short courses for government officials and giving talks in remote Peruvian communities to share the results of the INGEMMET studies.



Field School in Matucana high risk sector: beside debris flow (2010).



Teaching in a remote Peruvian place (Apurimac, 2012).



Peruvian delegation to Interregional Project South American Atlas of Natural Hazards (2014).

In 2011, after consolidating my career with a master's degree and the position of Project Manager in my department, I was invited to teach as a part-time professor in my alma mater university. The course was the same the one that influenced me when I was an undergraduate student: 'Geology Applied to Construction'. I tried to do my best, developing and presenting conferences, laboratory programs and field trips for my undergraduate students.



With colleagues from Technical University of Madrid when I developed my Master's degree (Madrid 2007).

In 2012, being involved in the Young Earth Scientist (YES) network, I established its Peruvian chapter and after my participation in a round table organized by the International Association for Promoting Geoethics (IAPG) in Italy (2014), I received an invitation to create the Peruvian section of this organization. My membership and position in these organizations have allowed me to

organise and participate in symposiums, forums, conference cycles, round tables and other activities with the support of national and international entities.

Moreover, I was invited as a trainer in field schools organized by the Geological Society of Peru (SGP) and as guest speaker in other Peruvian research centres, developing strong links with them. In 2015, I promoted the organization of the first International Mineral show in Lima – MinerLima, which was a success in sharing Geoscience with the general public in Peru.



Giving a conference organized by Geological Society of Peru (2013).

In 2015 I had the opportunity to teach students of the diploma in Research and Evaluation of Geological Risks which was part of the Master degree in Disaster Management of the Faculty of Civil Engineering at the university. The field trips that were part of the research programs I was developing in INGEMMET, as well as the courses taken abroad, served as the basis for developing my laboratory and field practice with my students.



Excursion to evaluate Geology of Costa Verde Hills (Lima, 2016).



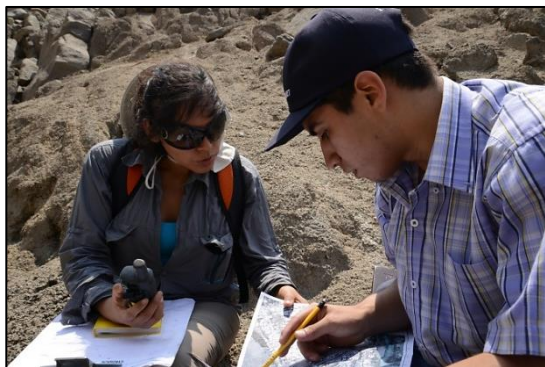
With classmates of course on Erosion Control in Japan (2015).



Field School for authorities in Abancay, Peru (2017).

Balancing professional and personal life

Despite increased responsibilities as the Peruvian delegate in national and international commissions, as well as managing research programs in remote Peruvian locations, I started my doctoral studies in 2012. It is a challenge for a woman in Peru, not only because of the lack of institutional support but because of exclusion by other Peruvian geoscientists (including women) who still think that "a single mother cannot be a researcher".



Teaching geomorphology (Lima, 2017).

It was complicated, but I tried to balance my professional and personal journey. However, I realized that it would be impossible to deal with all the activities at the same time. That is why I decided to move to Australia to work full time under the supervision of my Australian advisor Ken Evans from Charles Darwin University. My thesis research is a classic tertiary geology study combined with GIS analysis. I focused my attention on disaster prevention, always thinking about how to help prevent losses and deaths in my country. I know that indiscipline in the construction of houses without considering the scientific advice, and lack of knowledge, are the main causes of increased risk due to natural phenomena in Peru.

Finally, I managed to complete all the requirements and I lectured my doctoral thesis in Madrid (Spain) in November 2018.

LAIGEO and how to integrate Latin America

In 2018, I received the invitation to participate in the VIII International Conference of the International Geoscience Education Organization (GeoSciEd), Campinas (Brazil), where I met great educators like Roberto Greco, Chris King, Ana Maria Castillo Clerici, Hector Lacreu among others. As a result of the conference, Latin American participants joined forces to create the Latin American chapter of IGEO: LAIGEO.

Since the creation of LAIGEO, I have had the opportunity to work with other Latin American academics not only to build strategic relationships and contribute to raising awareness about Geoscience knowledge but to develop a new educational strategy in the region.

Likewise, as a Peruvian council member in IGEO, I have organized the Peruvian delegation and initiated coordination with Peruvian entities to organize the first Earth Science Olympiad in Peru.



The founders of LAIGEO (2018).

What follows: trust and continue without giving up

Nowadays, as I am beginning to get used to living in a foreign language country, I have started research on geotechnical evaluation and rehabilitation of areas affected by erosion, as a university fellow in Charles Darwin University (Australia).

I can summarize my life as a kind of trial and error learning. I believed that organising my agenda would allow me to develop my professional life and enjoy life with my loved ones. However, in organising there are lot of different factors

to analyse. Although I did not manage to achieve all my goals in the time I had planned, I managed to complete them eventually. This means I didn't change my plans, I just postponed some of them and then moved on. But everything I have achieved has been possible thanks to the support of the people who love me, seizing the opportunities and keeping in touch with colleagues and friends who shared and supported my ideas.

We should consider that life on Earth is short and not worth wasting time in endless debates, but in moving forward to reach our goals. It is our responsibility as scientists to do our best to help humanity. This is possible when we continue to pursue our objectives and do not give up. We must share everything we have learned as a contribution to the generations to come. We must also never stop encouraging our students to travel and obtain scholarships to train and continue the learning-teaching cycle.

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